

REMARKS

I. Claim and Drawing Objections

In the Office Action of April 24, 2002, the drawings of the present application were objected to under 37 CFR §1.83(a) for not including the feature “a warning is issued when the error rate exceeds a predetermined level”, as claimed within Claim 11. In response to this objection, Fig. 8 and the paragraph beginning on page 40, line 8 of the specification have been amended with the support of the originally filed application (e.g., Claim 11; paragraphs beginning on pg. 6, line 8 and pg. 39, line 18). Thus, Fig. 8 more clearly shows an exemplary embodiment where a warning may be issued over the hit input 818 when an error rate exceeds a predetermined level. No new matter has been added to the application within this amendment, as required by 37 CFR §1.121. Accordingly, Applicant respectfully requests allowance of this amendment.

Additionally, Claim 5 was objected to due to an informality and has been amended to change the word “be” to “been”, as suggested by the Examiner. As with the previous amendment, no new matter has been added to the application within this amendment. Accordingly, Applicant respectfully requests allowance of this amendment.

II. §112 Rejections

Additionally in the pending Office Action, Claim 6 was rejected under 35 U.S.C. §112, first paragraph, as containing subject matter not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. Additionally, Claim 6 was rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the

invention. However, Applicant respectfully suggests that the pending Claim 6 is definite and is supported by the originally filed application. Accordingly, Applicant traverses the rejections and respectfully requests reconsideration.

To bring the specification into conformance with the Examiner's requests, the paragraphs beginning on page 6, line 18, and page 42, line 5, of the specification have been amended to incorporate language from the originally filed Claim 6. Thus, Applicant respectfully suggests that the pending Claim 6 is adequately supported within the specification. As described in an exemplary embodiment, a flow may automatically time out after a predetermined idle period, and a predetermined period may be adjusted based on a potential error rate (as described on page 42, lines 5-11; pg. 29, lines 1-5). If the idle time is increased resulting in more tag entries, the probability of generating a duplicate tag increases because more entries are retained. Clearly, one way to mitigate this increased error probability is to increase the length of the tag, as set forth in originally filed claim 6. Thus, because a longer tag may be less susceptible to errors, the length of a tag may depend on the length of the predetermined period (see page 6, line 18 to page 7, line 2).

III. §102(e) Rejections

Also in the pending Office Action, Claims 1-3, 5, 6-9, 14-16, 18-21, 23-24, and 27-31 were rejected under 35 U.S.C. §102(e) as being anticipated by Liu et al., U.S. Pat. No. 6,018,526, (hereinafter "Liu") and Preneel et al., U.S. Pat. No. 5,664,016, (hereinafter "Preneel"). However, Applicant respectfully suggests that the cited references do not anticipate the presently claimed invention. Accordingly, Applicant traverses the rejections and respectfully requests reconsideration.

Applicant's pending independent Claims 1 and 23 set forth a method for switching packets in a switch fabric. The methods include the steps of computing a tag for the packet, and associating switching information with a tag. The claims have been amended to clarify that the switching information defines a route through a plurality of interconnected switch nodes as shown, e.g., in Figure 2. Because these amendments are supported by the originally filed specification, and no new matter has been added to this application, as required by 37 CFR § 1.121, Applicant respectfully requests allowance of these claims.

Additionally, since the remaining claims depend from Claims 1 or 23, these Claims also include the above limitation and are thus allowable for at least the same reasons as Claims 1 and 23. Accordingly, all pending claims are allowable and the indication of allowance is earnestly requested.

A. Liu Does Not Disclose Interconnected Switching Nodes

In contrast to the present invention, Liu discloses a bridge device with self-learning for interconnecting network LAN segments (col. 1, lines 8-10). Liu does not disclose a switch fabric having a plurality of interconnected switching nodes. Rather, it appears to include only a single bridging element (i.e., element 44, Figure 1) connected to a number of ports (32, 34, 36, 38, 40, 42) for forwarding or blocking packets. Applicants therefore respectfully submit that Liu does not anticipate the presently claimed invention.

B. Preneel Does Not Cure the Deficiencies of Liu

Preneel relates to a keyed hash function and a method of building message authentication codes with the hash function (col. 1, lines 12-15). Preneel does not describe a plurality of interconnected switching nodes. Thus, it is evident that Preneel does not cure the deficiencies of Liu and does not anticipate the presently claimed invention.

IV. § 103 Rejections

In the pending Office Action, Claim 4 was rejected under 35 U.S.C. §103(a) as being unpatentable over Liu in view of Griesmer et al., U.S. Pat. No. 5,555,405 (hereinafter “Griesmer”). Furthermore, Claims 10 and 17 were rejected under 35 U.S.C. §103(a) as being unpatentable over Liu in view of Calvignac et al., U.S. Pat. No. 6,044,079 (hereinafter “Calvignac”). Additionally, Claims 25-26 were rejected under 35 U.S.C. §103(a) as being unpatentable over Liu in view of Anderson et al., U.S. Pat. No. 6,021,202 (hereinafter “Anderson”). However, Applicant respectfully suggests that the additional cited references do not cure the deficiencies of Liu stated above. Accordingly, Applicant traverses the rejections and respectfully requests reconsideration.

Griesmer teaches a method and apparatus for free space management in a forwarding database having forwarding entry sets and multiple free space segment queues (title; abstract). Calvignac teaches a method and apparatus for managing data traffic and for selective discarding of frames in an ATM network (col. 1, lines 4-7). Anderson teaches a computer-based method for creating a signed electronic document (col. 10, lines 37-38). None of these cited references, alone or in combination, describe a plurality of interconnected switching nodes. Thus, Applicant respectfully suggests that none of the cited references, alone or in combination, anticipate the presently claimed invention.

Additionally, since Claims 4, 10, and 17 depend from allowable Independent Claim 1, and Claims 25-26 depend from allowable Independent Claim 23, these Claims are thus allowable for at least the same reasons as Claims 1 and 23. Accordingly, Claims 4, 10, 17, 25-26 are allowable and the indication of allowance is earnestly requested.

V. Claims 1-32 Are In Condition For Allowance

Therefore, in light of the preceding arguments, Applicant respectfully submits that all pending Claims 1-32 are allowable and the indication of allowance is earnestly requested. The Applicant further respectfully requests favorable reconsideration.

If any questions or issues remain, the Examiner is invited to immediately contact the undersigned patent agent, Neel Sukhatme, at (312) 913-0001, ext. 2294.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION

Please substitute the following amended paragraphs for the paragraphs in the same location:

Paragraph beginning on page 6, line 18:

The tag can be generated from a hash code generator, a pseudo random number generator, a shift register with a feedback loop, or some other type of tag generator. The tag generator may have a non-zero probability of generating the same tag from different inputs. The length of the tag can be modified depending on the probability of the tag generator producing the same hash code from different input packets, or depending on a predetermined period.

Paragraph beginning on page 39, line 18:

If a single cache is used for all of the flow detectors, the table entries should be marked to indicate which flow detector generated the tag. This is useful for reducing errors and for measuring the error rate. The switch 802 is a statistical switch and so there is a non-zero probability that a frame, or packet, will be misdirected. By marking the entries it is easy to avoid any mistakes where an HTTP packet matches a tag for a RTP flow. Thus, although there could be twenty different flow detectors operating on the same switch, the error rate will remain independent of the number of flow detectors. The error rate of the switch can be measured in real time as well. By recording the cross-flow detector hits in the table, the error rate can be computed. If there are n flow detectors, then the cross-flow detector hits will be n times the error rate. Thus, the error rate of the switch can be directly measured. Thus, as shown in Fig. 9, cross flow hits may be recorded as an indication of the error rate, and a warning issued if the error rate exceeds a predetermined level.

Paragraph beginning on page 42, line 5:

In order to control the error rate and limit the size of the cache, tags are only kept in the cache 804 if they are active. An idle time out can be selected and adjusted for the switch. For example, if the application the switch is being used for is characterized by long idle periods, it may be necessary to increase the idle time out to accommodate the application. However, if the error rate as measured by the cross-flow detector hit rate is rising, it may be desirable to shorten the idle period to reduce the number of active flows and thus reduce the number of tags in the cache. Alternatively, the length of the tag may be adjusted in response to the idle period, such that a longer tag will serve to offset the increase in error associated with a longer idle period.

IN THE CLAIMS

Please amend Claims 1, 5, and 23 as follows:

1. A method for switching a packet, the method comprising:

computing a tag for the packet;

looking up the tag in a table, the table comprised of entries, *the entries*

associating switching information with a tag; said switching information defining

a route through a plurality of interconnected switch nodes; and

said
using switching information associated with the tag in the table to switch the

packet if there is an entry for the tag in the table.

5. A method of claim 1, wherein the entries in the table are removed if [a] the tag corresponding to the entry has not [be] been looked up in a predetermined period.

23. A method comprising:

computing a tag for a packet;

looking up the tag in a table, the table comprised of entries, ^{each of} the entries

associating information about the flow with ~~tags~~, the information including route
information specifying a route through a plurality of interconnected switch nodes;

updating information about the flow associated with the tag if there is an entry for the

tag[.];

creating a new entry in the table if there is no entry for the tag;

removing entries that have not been accessed for a predetermined period from the table.